

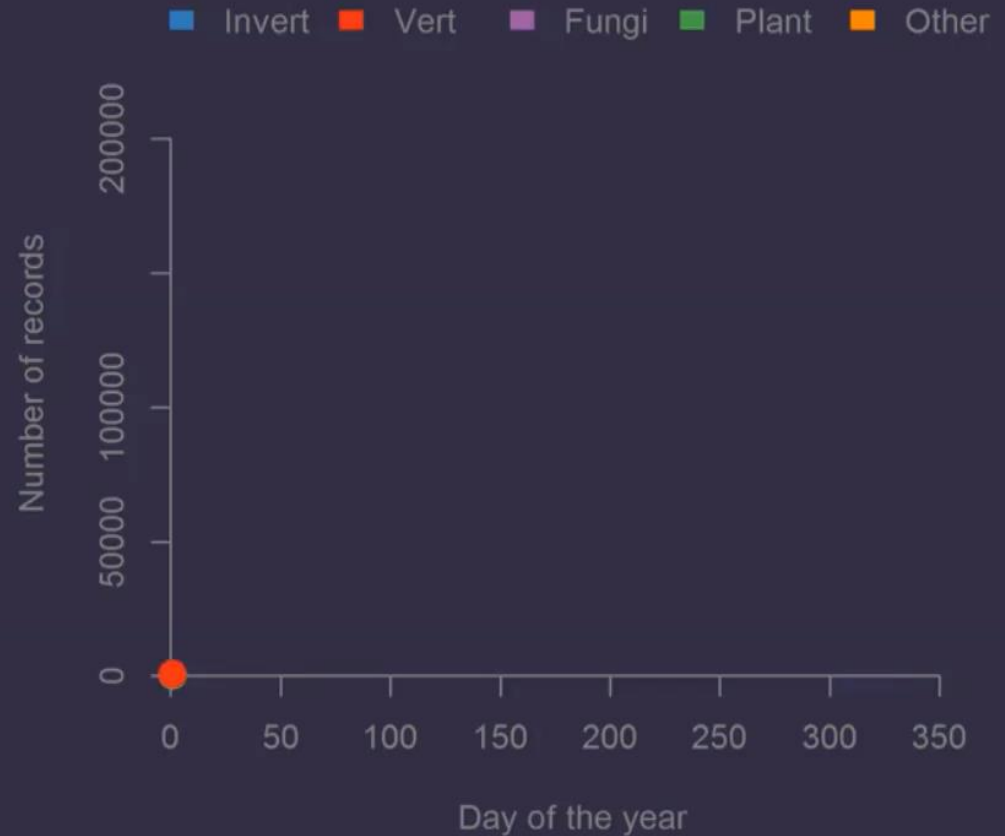
BRC Updates

Freshwater Recording Schemes (and Recorders)

Helen Roy

Celebrating one year of recording wildlife

January



www.brc.ac.uk/iRecord



Welcome to the BRC Newsletter

We are pleased to provide this update from the Biological Records Centre (BRC). BRC has provided a focus for biological recording for over fifty years and works closely with more than 80 national recording schemes and societies. We hope you enjoy reading about some of our recent activities, built upon the unique and inspiring work of many naturalists who are committed to studying our flora and fauna.

Dr David Roy
Head of BRC

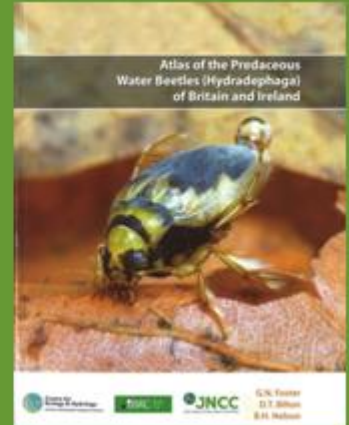
Recording scheme news

There have been a number of new schemes and changes to scheme organisers recently, including a new recording scheme covering leaf-mining flies in the family Agromyzidae and another new scheme devoted to beetles in the superfamily Cleroidea.

Beetles, bees, flies & aliens!

New and upcoming publications

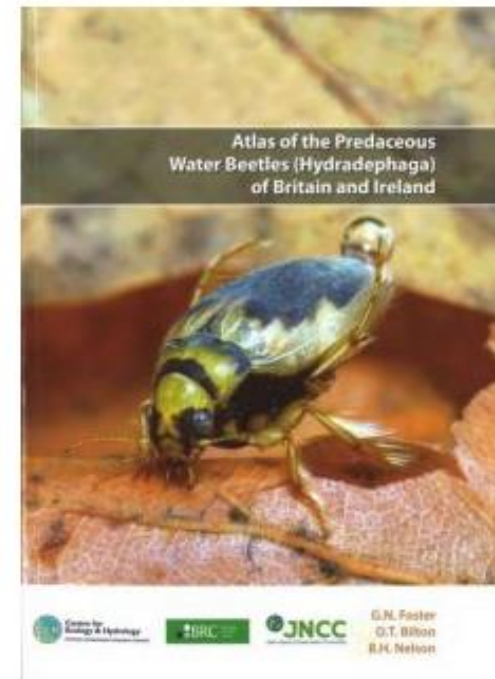
An update on recent and upcoming recording scheme publications, and research involving recording scheme data.



New and upcoming publications

Atlases and publications

- The *Atlas of the Predaceous Water Beetles* is now available (the second volume is in press): Foster, G.N. et al., (2016) Atlas of the Predaceous Water Beetles (Hydradephaga) of Britain and Ireland. FSC Publishing. This atlas includes the predaceous water beetles, or Hydradephaga - the whirligig beetles (Gyrinidae), the crawling water beetles (Haliplidae), one species of squeak beetle (Paelobiidae), the burrowing water beetles (Noteridae), and the diving beetles (Dytiscidae). One hundred and fifty-four species are reviewed here, 152 of them from Britain, 113 from Ireland, and 72 from the Isle of Man, with an additional two recorded only from the Channel Isles.



Atlas of the Predaceous Water Beetles

From ladybird atlas to field guide

Ladybirds (Coccinellidae) of Britain and Ireland



Bloomsbury Wildlife Guides

Field Guide to the **Ladybirds** of Britain and Europe



Helen Roy and Peter Brown
Illustrated by Richard Lewington

CEH Centre for Ecology & Hydrology
NATURAL ENVIRONMENT RESEARCH COUNCIL

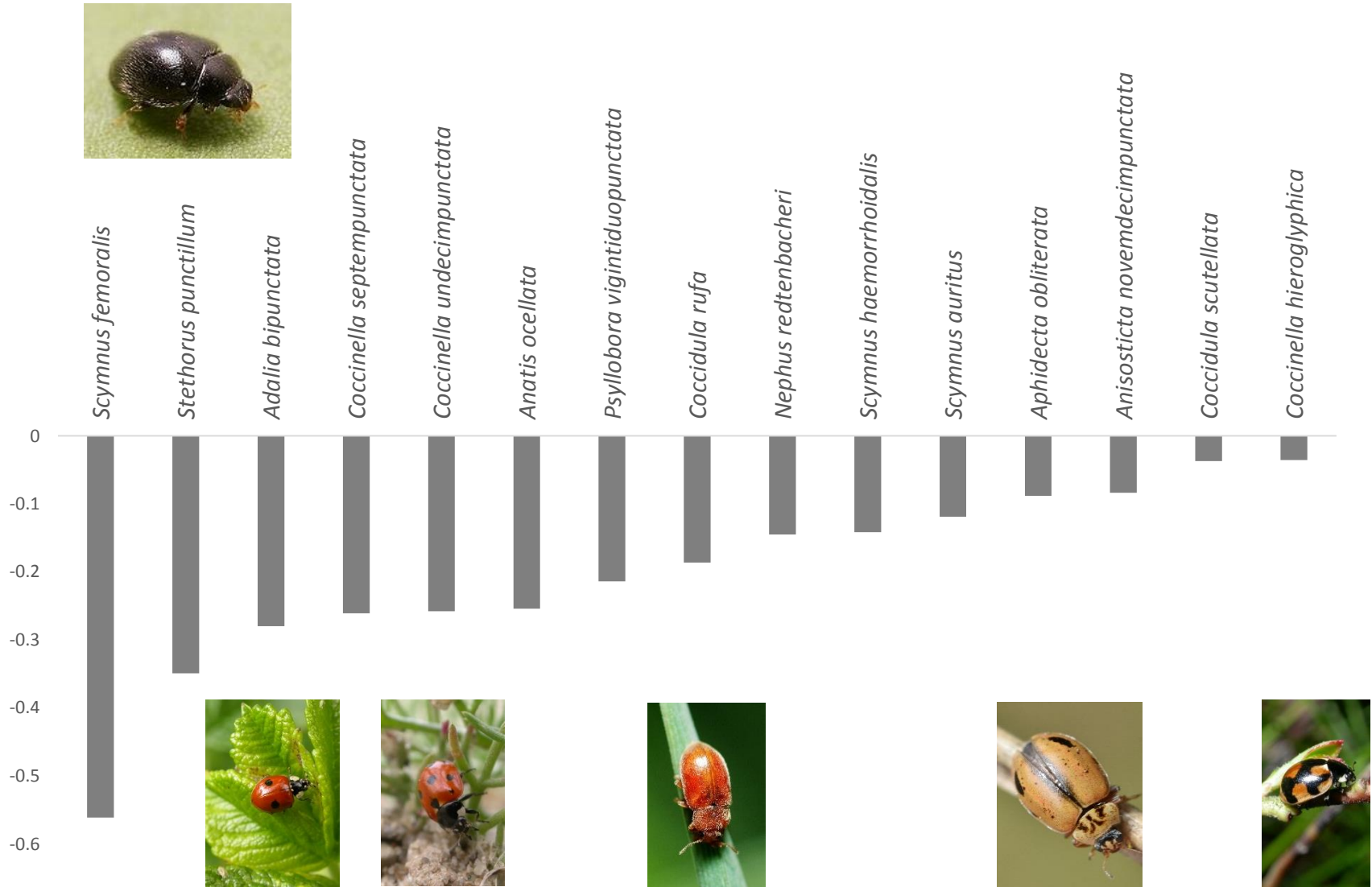
BRC Biological Resources Centre

JNCC Joint Nature Conservation Committee

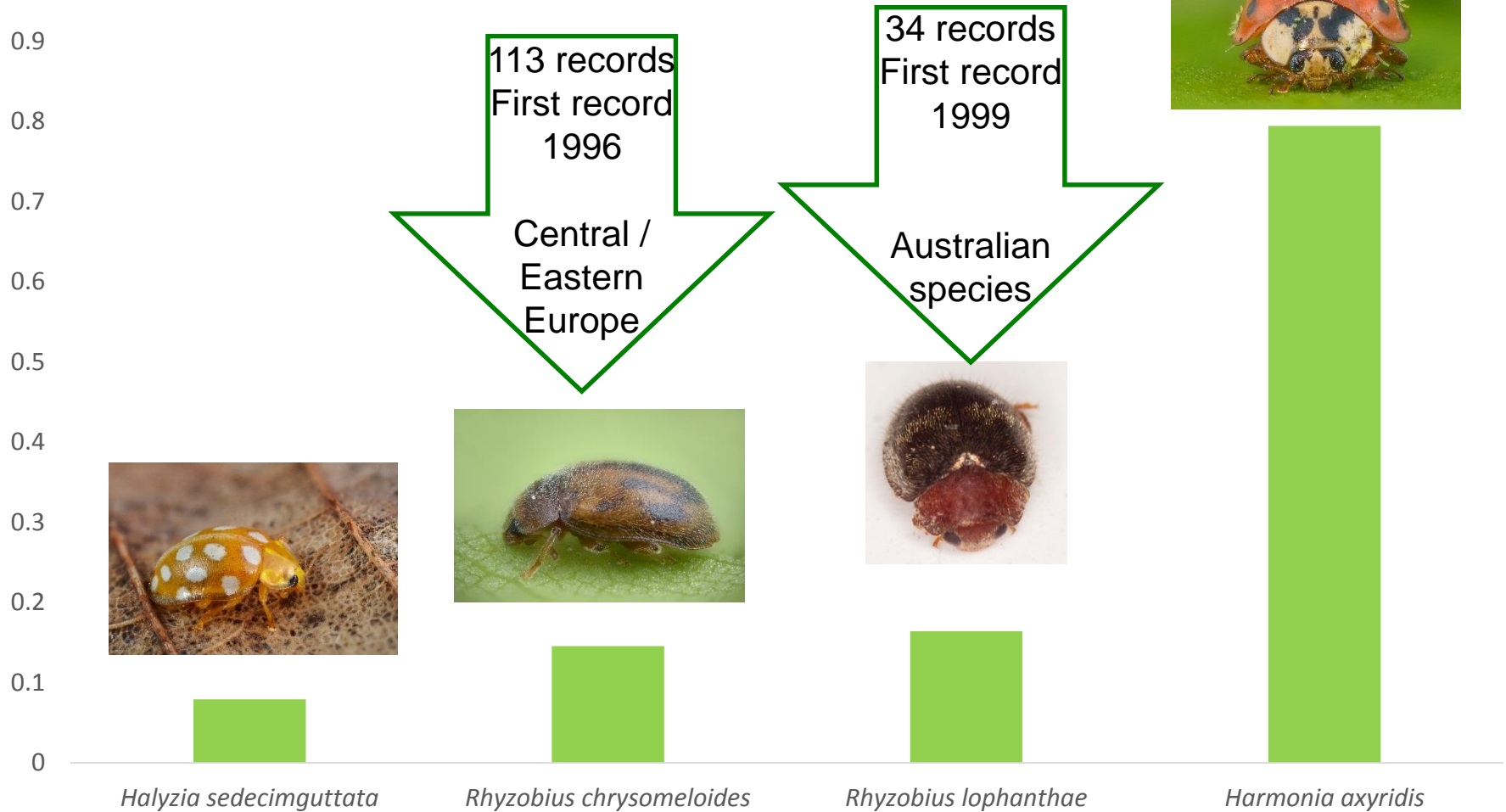
Helen Roy
Peter Brown
Robert Frost
Remy Poland

BLOOMSBURY

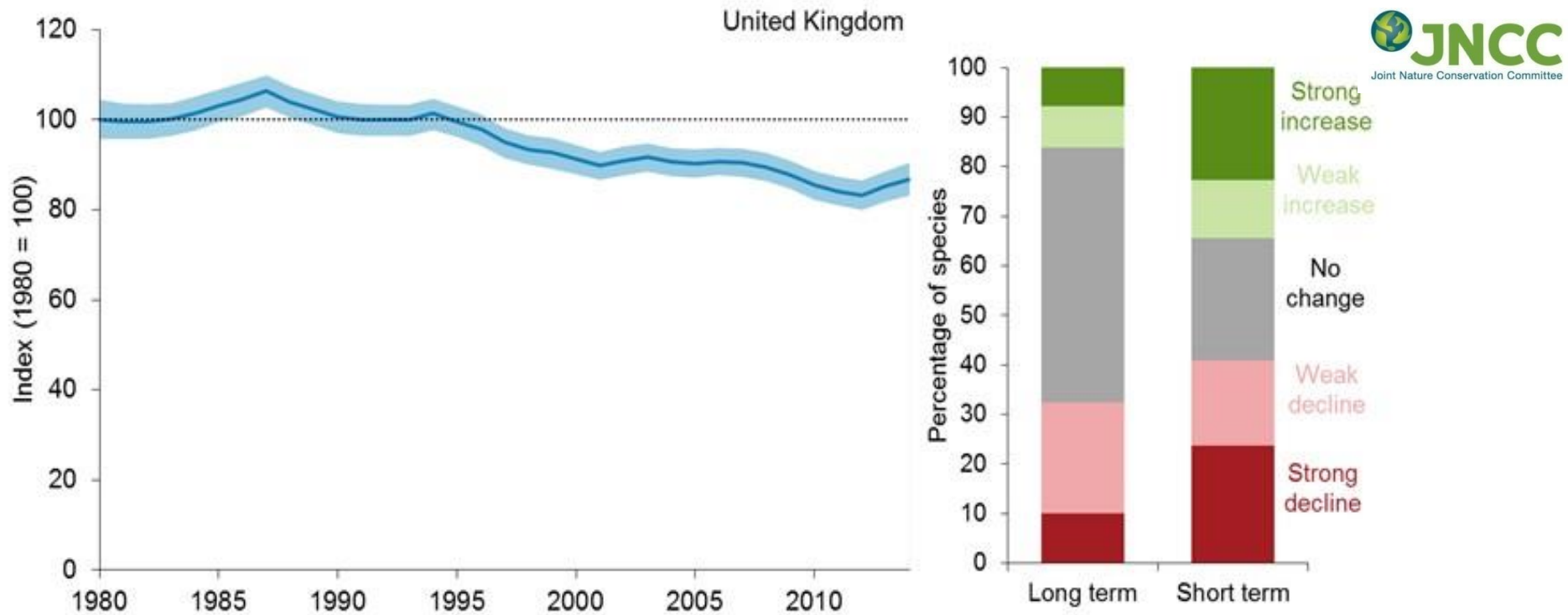
Species in decline (1995-2015)



Species on the increase



New indicators...new opportunities



Average relative change in distribution of **389 species of wild bee and hoverfly** using 1km occurrence records

- Does the Indicator reflect changes in **abundance** of different groups?
- Can we improve these trend estimates with structured surveys?

ARTICLE

Received 16 Feb 2016 | Accepted 28 Dec 2016 | Published 15 Feb 2017

DOI: 10.1038/ncomms14435

OPEN

Non-saturation in the accumulation of alien species worldwide

Hanno Seebens et al.[#]

RESEARCH HIGHLIGHTS THIS WEEK

LOWER LEVELS of microbes with antimicrobial activity than did their healthy counterparts. The team identified several *Staphylococcus* species, and the peptides they make, that specifically kill *S. aureus*. Only the strains with antimicrobial activity were able to lower *S. aureus* levels when applied to people's skin. *Nat. Transl. Med.* 9, eash4650 (2017)

ADHESIVE

A super-strong underwater glue

A synthetic adhesive inspired by the sticky proteins made by mussels can hold to wet surfaces more tightly than even live mussel can. Previous mussel-mimicking adhesive were strong when dry, but less effective underwater. Jonathan Wilker and his colleagues at Purdue University in West Lafayette, Indiana, created a polymer with some of the same structural elements as the sticky protein threads that mussels make to attach themselves to rocks and other surfaces. Previous adhesives had catechol chemical groups attached to a synthetic polyurethane backbone, but the new material incorporates those groups into the backbone, as mussels' adhesive proteins do. This may explain the polymer's high degree of stickiness underwater, the authors say. *ACS Appl. Mater. Interfaces* <http://dx.doi.org/10.1021/acsami.6b09172> (2017)

REPRODUCTION

Predicting smell from structure

Algorithms can predict a molecule's odour on the basis of its chemical structure. Fabio Meyer at IBM's Computational Biology Center in Yorktown Heights, New York, and his colleagues used 49 people to describe hundreds of molecules (pictured), and mix them on 16 different pleasantness and 19 other descriptors, such as 'fresh', 'musky' and 'balsamy'. The researchers gave these ratings, along with information on the substance's chemical structure, to 22 teams of computational scientists, who compared to

EVOLUTION

How humans adapt to arsenic

people living in Chile's Atacama Desert have different versions of a gene that allow them to cope with the region's naturally high levels of arsenic. Arsenic from rocks seeps into the desert's scarce water sources, exposing people in the Camarone Valley to levels

that of 10 micrograms per litre set by the World Health Organization. Mauricio Lopez at the University of Chile in Santiago and his colleagues compared the DNA of 50 people from this region with that of 92 individuals from other areas of the country that have lower levels of arsenic. They identified mutations that increased the efficiency with which the arsenic methyltransferase enzyme processes the element, and found these to be more common in the people of the Camarone Valley. Nearly 70% of the Camaronean people carried the most protective variant, considerably more than in other populations. These people have evolved over just 7,000 years under natural selection to tolerate arsenic, the authors say. *Am. J. Phys. Anthropol.* <http://dx.doi.org/10.1002/ajpa.24744> (2017)

ADAPTATION

Skulls show migration history

A study of skulls of early people in South America suggests that there were multiple waves of migration into the New World more than 10,000 years ago. Wide variation in the skull shape of modern South America people, but triggered debate over whether this results from rapid changes after the arrival of people to the region, or from successive migrations that introduced diversity. Nielsens van Cranston-Traubel at the University of Buffalo in New York, and her colleagues compared the shape of Palaeoamerican crania (pictured) from the Lago Santa site in Brazil with those from modern populations. The team used the data to develop a model of ancestry, and found that the most recent common ancestor of the Palaeoamericans and contemporary Native Americans groups lived outside the Americas.

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that the best predictive, machine-learning algorithms. After initially developing and training their algorithm on a partial data set, the terms used their algorithm's ability to predict people's perception of the remaining molecules. Across all models, garlic and 'fatty' were the best-predicted attributes, at about 70% accuracy. Such tools could be used by the flavour and fragrance industry to formulate products, the authors say. *Sensory* 335, 820-826 (2017)

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This adds weight to the theory that people moved into the Americas at many different times from northeast Asia across the Bering land bridge. *Sci. Adv.* 3, e1602209 (2017)

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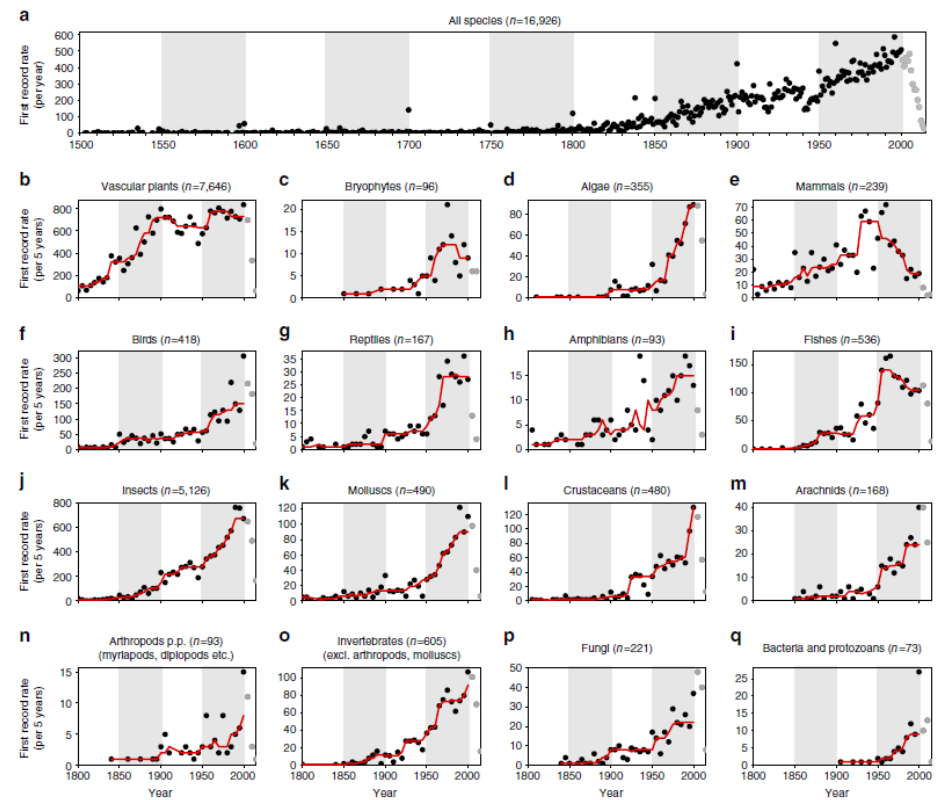
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Non-native species surveillance



Asian hornet - eradicated in 2016, 2017, 2018



Alien CSI

Increasing understanding of alien species through citizen science



COST is supported by the EU
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Welcome to Pantheon, the tool to help you analyse your invertebrate species samples.

Pantheon is currently under construction. This current version is a prototype, with further analysis options and support information planned to be incorporated over 2016 and 2017.

About

Pantheon is an analytical tool developed by **Natural England** and the **Centre for Ecology & Hydrology** to assist invertebrate nature conservation in England. Users import lists of invertebrates into Pantheon, which then analyses the species, attaching associated habitats and resources, conservation status and other codings against them.

This information can then be used to assign quality to sites, assist in management decisions and augment other ecological study.

[Read more ...](#)

Register

To be able to enter your own species lists or to see records entered by others you must first **register** with Pantheon.

Registration is simple. Complete the form with your name and email address then wait for the message we send you which contains a link allowing you to set a password and log in.

If you have already registered and need to log in, use the link in the menu bar.

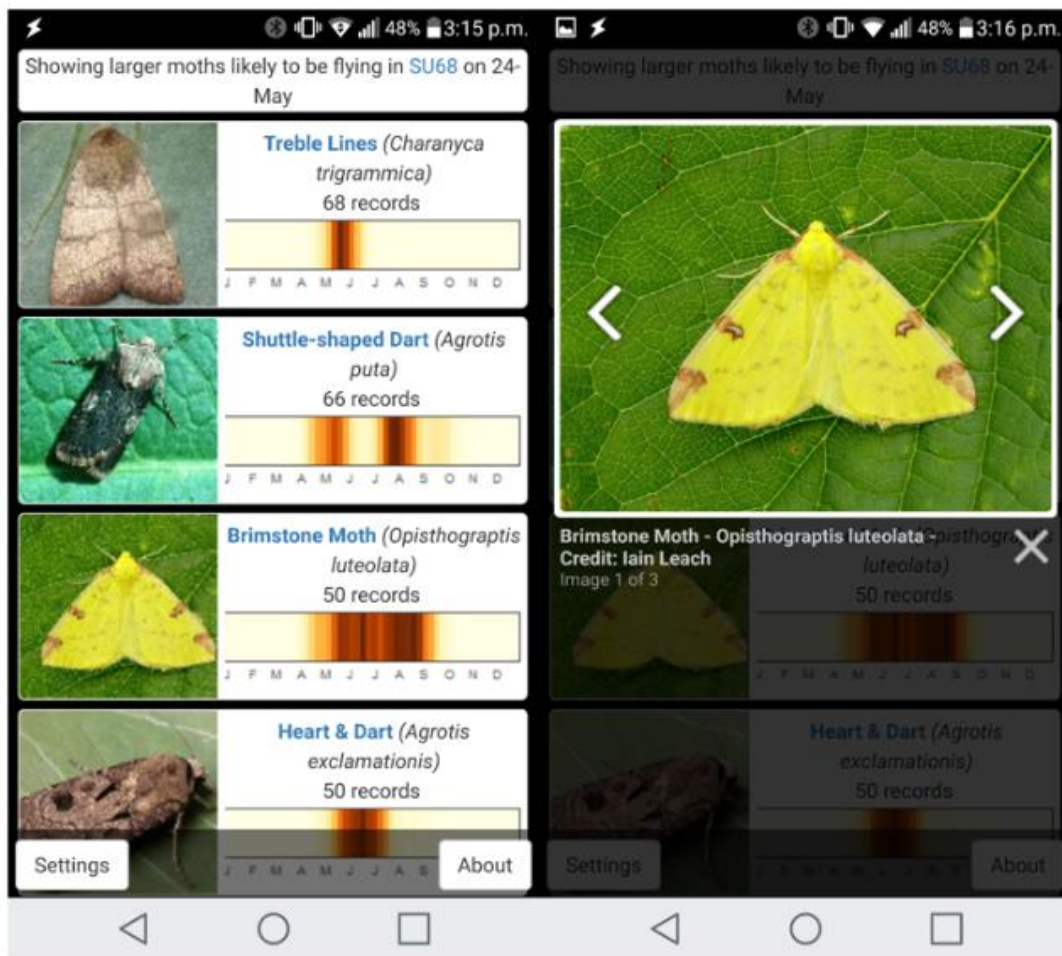
Register now...

Latest samples

Site name	Date	No. of species	Main habitats	Results
Test	08/02/2017	3		
test	08/02/2017	4		
Corfe Mullen	08/02/2017	7		
Manor Way	01/01/2014	530		

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- Interest from National Trust, EA, NE and RSPB
- Regular, automated upload to the NBN Atlas in Darwin Core format

Download FREE app: <https://www.ceh.ac.uk/citizen-science-apps>

NBN Rulesets

Updated NBN rulesets using verified data within iRecord – publication soon

iRecord also automatically updates the rulesets as records from new locations are verified

Is this advantageous to Freshwater Recording?

iRecord App has ‘dynamic attributes’

What attributes would be useful to include for Freshwater Recording Schemes?

